

Assessing the Impact of Financial Disclosure Forms on the Mortgage Selection Process

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Abstract The recent housing crisis has raised the important question of whether consumers are making appropriate decisions when it comes to various mortgage options. Specifically, do consumers know when to choose an adjustable rate mortgage versus a fixed rate mortgage? Further, does additional mortgage disclosure help consumers make the correct decision? This study uses unique data in a 2x2 experimental design in which some participants were randomly assigned to receive a Federal Reserve Board document containing information explaining the difference between these two major mortgage types. Participants were then given two distinct scenarios, one where an adjustable and one where a fixed rate mortgage is more appropriate. Path analysis is used to determine the probability of consumers making the correct decision in both scenarios. The results suggest that receiving a mortgage information disclosure document does indeed make a difference in consumers selecting the most appropriate mortgage type. 23% of those who did not receive mortgage information correctly chose the most appropriate mortgage for both scenarios while 36% correctly answered both after receiving the mortgage education information, a 57% increase. Factors such as overall financial knowledge and Truth in Lending Act comprehension are also important predictors of choosing the correct mortgage type. Not all consumers who were exposed to financial information made the correct decision which supports the continued use of mortgage counselors and or educational programs to further assist consumers in selection the best mortgage type for their situation.

1 Introduction

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Beginning in 2008 signs of a housing crisis began as foreclosure rates increased leading to the end of the decades long growth of home values in the United States, and thus changing the financial outlook of many families. In 1990 the delinquency rate of mortgage payments, as calculated by the Census (2012), was 4.7% growing to 9.3% in 2010. The trend between 2000 and 2010 was even more stark as the delinquency rate for prime conventional loans went from 2.3% to 6.5%, and from 11.9% to 25.9% for subprime loans (Census 2012).

One question that still needs to be addressed is why so many households took on such mortgage types that appeared to be suboptimal such as choosing an adjustable rate mortgage (ARM) when a fixed rate mortgage (FRM) would have been more appropriate. Different mortgage types can be advantageous in various situations; nonetheless, the subprime market emphasized less on conventional FRM, and instead transferred interest rate risk to consumers. In some instances, homeownership education was required to qualify for some of these loans. Yet, with this approach, perhaps some consumers saw this as a necessary requirement, and the timing of such information was not optimal to influence their decision. Further, many courses do not require a test of such knowledge resulting in many consumers not truly understanding different types of mortgages and their implications on things such as family budgets.

This study examines whether consumers typically understand in which situation it is appropriate to utilize a FRM and an ARM. This study utilizes a 2x2 experimental design in which some participants were randomly assigned to a treatment group who received a Federal Reserve Board document (Federal Reserve Board, 2009) outlining basic financial information highlighting the differences between a FRM and an ARM. This document is readily available online but is not part of the required disclosure when choosing a mortgage or purchasing a home. Both the treatment and control groups were presented two scenarios, and were asked to select the

type of mortgage most appropriate for each, independently. Therefore the first level of the experimental design distinguishes those who receive the treatment while the second stage is whether they selected the mortgage type correctly. The purpose of the experiment is to help determine whether such a treatment can lead to better decision-making in hypothetical mortgage scenarios. For many, the home buying decision process may be stressful, and may result in decisions that are deemed not rational or optimal. Due to the hypothetical nature of the scenarios in this study, the stressful aspect of the process is eliminated to test if, based only on the mortgage information provided, a consumer is able to make the most appropriate mortgage selection. This may provide greater insight into the role information plays in influencing choice. The results may be useful in informing future policy or even best practices for deciding required homeownership information or education programs that would better prepare potential borrowers for selecting the appropriate type of mortgage.

2.1 Information and knowledge

2.1.1 Mortgage specific knowledge

More precisely in the context of mortgage choice, financial illiteracy has been associated with financial mistakes such as excessive borrowing or high-cost mortgages selection (Bucks and Pence 2008; Lusardi and Mitchell 2007; Moore 2003). Furthermore, those mortgage holders who exhibit a higher level of financial, and mortgage knowledge are able to take advantage of current market opportunities such as mortgage refinance during a stage of decreasing interest rates (Campbell 2006).

Additionally, other studies have documented that specific financial knowledge in credit, mortgage, and interest rates should result in better financial decisions. For instance, evidence suggests that individuals who are able to understand and compute the interest rates of financial

obligations are more prone to make better borrowing decisions (Stango and Zinman 2007).

Consistent with these findings, excessive amounts of debt and deficient borrowing choices are linked to individuals who display a poor understanding of the power of interest accruing on both principal and interest, and disregard its implications in their financial decisions (Lusardi and Mitchell 2007; Lusardi and Tufano 2009). We hypothesize that participants who receive the Federal Reserve Board document outlining the difference between a FRM and an ARM will be more likely to choose the most appropriate mortgage in both scenarios.

2.1.2 TILA knowledge and information

Lack of information can undoubtedly lead to making wrong choices. The Truth in Lending Act (TILA) is one of the two enacted federal laws in the mortgage market that aims to help consumer make more informed choice through obligatory disclosures. TILA mandates lenders disclose information about credit costs and term—e.g. annual percentage rate (APR) and finance charge (Lee and Hogarth 1999). But research studies show that the mandatory TILA disclosures could be cumbersome and extensive, resulting in information overload for consumers (Durkin and Elliehausen 1990; Thakor et al. 1993). Thus, for the purpose of this study, we are concerned with how effectively consumers can process TILA information, and actually use it when making mortgage selection. We hypothesize that participants who have higher TILA comprehension are more likely to choose the most appropriate mortgage in both scenarios.

2.1.3 General financial literacy

According to Lusardi (2008), financial literacy impacts financial decision-making. Poor borrowing decisions and behaviors are connected to lack of knowledge of basic financial concepts. Additionally, Kozup and Hogarth (2008) highlight the importance of financial education and its respective role on making optimal financial decisions relative to individuals'

goals, needs, and values. Earlier studies had shown a positive link between improved credit use and management, and increased financial knowledge. Those individuals with higher financial literacy scores are more likely to follow suggested financial practices (Cude et al. 2006; Hilgert et al. 2003; Hogarth and Hilgert 2002). Several studies support that financial education, provided through financial counseling or intervention, can affect behavior (Bernheim and Garrett 2003; Clark and D'Ambrosio 2008; Lusardi 2002). We hypothesize that participants who score higher in the general financial knowledge quiz are more likely to choose the most appropriate mortgage in both scenarios.

2.2 Social Learning

Social learning is also an influential component in the process of decision-making. Danes (1994) explains that financial socialization is the process through which individuals obtain and develop beliefs, behaviors, knowledge, and norms that shape future financial behaviors and decisions. Various agents such as parents, school, media, professional, and others can serve as the socialization means. For example, Cho et al. (2012) explore the impact of financial socialization on the financial practices of low and moderate-income households. The study finds that two main agents of financial capitalization are parents and financial planners. The role of parents can suggest that in addition to different levels of resources, differences in social learning opportunities can influence preferences and subsequent behaviors (Gutter et al. 2010). We hypothesize that participants who grew up in a home with a mortgage will be more likely to correctly choose the most appropriate mortgage in both scenarios

2.3 Personal psychology and Social Cognitive Preferences

Risk tolerance is another influential determinant in the mortgage decision-making process. According to Campbell and Cocco (2003), households with lower risk aversion, more stable

labor income, and higher probability of mobility should be inclined to select ARMs. Coulibaly and Li (2009) explore further the determinants of the choice between FRM and ARM by using 1995, 1998, 2001, and 2004 Survey of Consumer Finances, a highly comprehensive data set for the purposes of mortgage choice. Consistent with previous findings, they confirm that borrowers who exhibit a higher level of risk aversion, have risky labor income, and are less likely to move in the short-run should tend to prefer FRMs. Furthermore, the study highlights a unique finding related to the importance of risk factors: attitudes toward risk notably affects the mortgage decision making process. For borrowers who display lower levels of risk aversion, affordability does not significantly impact mortgage choice; and income volatility and other pricing variable are less deterministic in this process than for more risk-averse borrowers. A more recent study (Mori et al. 2009) examines the psychological factors on why borrowers lean toward ARMs by testing a formulated hypothesis derived from Prospect Theory—which suggests individuals may frame gains and losses differently (Kahneman and Tversky 1979). The study (Mori et al. 2009) finds that risk-averse individuals will most likely choose ARMs in situation where the expected outcomes are negative, and under conditions of uncertainty; thus, becoming more risk tolerant as they accept to seek more risk. Factors in the psychological spectrum might explicate why in the context of mortgage-choice borrower would ponder more weight in pricing factors, rather than risk factors associated with ARMs.

Another factor under the umbrella of the psychological aspect of consumer' decision-making process is past experience and/or personal history. More specifically, this factor is classified as social-cognitive determinant. Consumers' past experience can significantly impact the decision making process. Several research studies examine how the particular personal history of an individual can play a key role and influential factor in future decisions. Juliusson et

al. (2005) explain that individuals are more prone to respond similarly, and arrive at the same verdict in situations that they have previously perceived a positive outcome from making a similar decision. Conversely, Sagi and Friedland (2007) demonstrate that individuals try to prevent to make decisions that in the past resulted in mistakes or failures. In many circumstances, though, the fact that potential decisions would be based on the learning of past experience does not guaranteed that the decision would be the best or optimal

2.4 Financial Position

Income has been shown to be a significant influence upon mortgage choice (Leece 2004). In fact, early studies on mortgage selection highlight the importance of level of income in this process. Brueckner and Follain (1988) conclude that level of income, and its expected growth path are significantly related to selecting a type of mortgage. Other research studies consider the notion of level of income by employing mortgage affordability, a more comprehensive variable, which in conjunction with risk exposure influence the choice of mortgage type, particularly among ARMs with different adjustment periods (Leece 2004).

2.5 Demographics

In the mortgage context, with a few exceptions (Sa-Aadu and Megbolugbe 1995; Sa-Aadu and Shilling 1994; Sa-Aadu and Sirmans 1995) borrower characteristics have been less successful in explaining the choice of mortgage (Leece 2004), and if so the influence is relatively weak (Mori et al. 2009). Nevertheless, this study controls for age, gender, formal education, and race as possible factors influencing mortgage choice

3 Methodology

3.1 Sample and experimental design

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The target sample for this group was lower-to-middle income families. In order to obtain the sample for a web-based survey, Survey Sampling International (SSI) was employed. SSI retains panels throughout the world; for our study, this was limited to the United States. Members of the panels joined knowing they would be asked to participate in a survey research.

The first level of the 2x2 experiment was established when the research team created two versions of the survey. One that contained mortgage education information¹, which is identified as the treatment; and one that did not, identified as the control. SSI was given the links to both versions of the survey. They then randomly assigned participants to one of the two groups, and sent them the appropriate link in early 2012. The second level of the 2x2 experiment asked participants to choose either a conventional FRM or an ARM for two independent scenarios. For each scenario, participants were told to assume that the interest rates were appropriately competitive, and that a person would be approved for either type of mortgage. The scenarios are provided in Appendix A. In the first scenario one could see that an ARM is appropriate, while a conventional FRM was the clear choice in the second scenario. Thus, the dependent variable is determined based upon the mortgage type selected. For each scenario, the more appropriate mortgage type was deemed as the correct mortgage option. The dependent variable thus consists of possibilities: answering both scenarios correctly, answering neither scenario correctly, choosing the ARM for both scenarios, and choosing the FRM for both scenarios. T-tests were administered to check for differences in means between the treatment, and control group for each variable resulting in no differences at the 1% or 5% level (results available from authors upon request).

¹The Federal Reserve Board Consumer Protection Resources Fixed vs. Adjustable Rate Mortgages Document

SSI fielded the study with repeat efforts until the desired sample of 500 was reached. Incomplete surveys were omitted from our final sample, resulting in a sample of 480. This was split into 235 (49%) for the treatment group and 245 (51%) for the control group.

3.2 Variables

3.2.1 Information and knowledge

The treatment and control group are differentiated if they received the aforementioned Federal Reserve Board document outlining some of the basic differences between a FRM and an ARM. This mortgage specific knowledge is an indicator variable of 1 or 0.

All respondents were presented with a two page Truth in Lending Act document (see appendix B) with simulated values, which were comparable to what an actual homebuyer would see in an actual TILA document. The document provided the respondent with all of the relevant statement of loan terms such as: loan amount, loan term, estimated settlement charges, prepayment penalty, annual percentage rate, a table showing potential changes in interest rate and payment associated with an ARM etc. Even though anyone taking out a mortgage is required to receive a TILA document, actual TILA comprehension is unknown. Respondents were then given five questions to test their knowledge on the information received in this document (see Appendix C). A respondent's comprehension was based on the number of questions answered correctly ranging from zero to five forming our TILA comprehension variable with a higher score indicating better mastery of the material.

A general financial knowledge variable consisted of 6 questions created by Mandell (2008) in an attempt to gauge a respondent's financial knowledge. There was one question in each of the following categories: credit, inflation protection, credit report access, loan interest rate, APR, and risk and return (see appendix D). Unlike with the TILA comprehension

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questions, no information was given to the participants to aid them. A respondent's financial knowledge score was based on the number of questions answered correctly, and thus ranged from zero to six with a higher score indicating higher financial knowledge.

3.2.2 Social learning

In addition, a supplemental question was posed to gain insight into their exposure to homeownership decision-making making process. This question asked participants if their parents were homeowners for some or most of their childhood.

3.2.3 Personal psychology and social cognitive preferences

The Grable and Lytton (1999) risk tolerance questionnaire that consists of 13 questions was used to estimate a participant's risk tolerance. From those 13 questions, respondents were categorized as having below average risk tolerance, average risk tolerance, or above average risk tolerance.

Participants were also asked if they currently or ever had a mortgage coded 1 if they had and 0 if they had not.

3.2.4 Financial position

Respondents were asked of their household's current income. Income was a categorical variable with 6 categories; less than \$20,000, \$20,001 to \$40,000, \$40,001 to \$50,000, \$50,001 to \$70,000, \$70,001 to \$90,000, and greater than \$90,000.

3.2.5 Demographics

Participants were asked for basic personal characteristics that are common preferences shifters in consumer decision-making models. Respondents were asked for their current age and gender. In addition, respondents were asked to choose the best fit for their race and ethnicity. The list included: White (non-Hispanic), African American/Black (non-Hispanic), Hispanic, Asian, or other. Households were asked to state their highest level of school completed from the following

list: Less than high school degree, high school degree or equivalent (e.g., GED), currently in school, completed some college but no degree, associate degree, bachelor degree, or graduate degree.

See Table 1 for the further independent variable description.

3.3 The Path analysis model

An advantage of path analysis over OLS is that a better fit pathway or connections can be inductively explored from initial hypotheses or theory. To this end, the four key variables of interests that we expect to impact the likelihood of a participant selecting the most appropriate mortgage in both selections is risk tolerance, financial knowledge, TILA knowledge, and the treatment document. Thus, these four variables had direct pathways to the dependent variables of answering both questions scenarios correctly. It is expected that those with higher general financial knowledge will better be able to make financial decisions, in this case a mortgage decision. Similarly it is expected that those who better understood the TILA document will better understand costs of a mortgage that will lead to making a better mortgage decision. Those who received the treatment document should be most likely able to answer both mortgage questions as all the information needed to answer the questions are provided in the document. We believe that there is still a factor outside of knowledge that will influence participant's mortgage decisions, namely risk tolerance. Participants who have low risk tolerance may not be willing to select an adjustable rate mortgage in any situation, making them less likely to answer both scenarios correctly.

The dependent variable is examining whether a participant was able to answer both hypothetical mortgage scenarios correctly. This results in a binary variable of correct or incorrect. Due to the nature of path analysis, a binary dependent variable is not appropriate.

Therefore, the dependent variable is a continuous variable f_2 derived from the probit regression.

The sign of f_2 is a predictor of whether a participant answered the scenarios correctly.

The goal is to estimate the latent variable $Y^* = X'\beta + \varepsilon$ in probit model, where $\varepsilon \sim N(0, 1)$. Then the binary variable of correct or incorrect can be viewed as an indicator for whether this latent

variable is positive:

$$Y = \begin{cases} 1 & \text{if } Y^* > 0 \text{ i.e. } -\varepsilon < X'\beta, \\ 0 & \text{otherwise.} \end{cases}$$

Therefore, the predictor of Y^* can be derived from two parts: $\widehat{x'\beta}$ and $\hat{\varepsilon}$. In this model, X is risk tolerance, TILA comprehension, and financial knowledge. The predicted value for the error term can be derived from the “residual” of the probit model

$$\hat{\varepsilon} = Y - \hat{P}$$

where Y is the decision the participant made which is either right or wrong (1/0). Therefore, the dependent variable f_2 can be derived as follows: $f_2 = \widehat{x'\beta} + Y - \hat{P}$.

4 Results and discussion

4.1 Descriptive characteristics

Table 3 provides the results of the descriptive statistics. The majority of the respondents in the sample were white (80.8%) and had a mean age of 44.22 years. Education attainment, income, and consumer debt of the respondents had minimal variance across the respected categories.

Females were a slight majority of the sample at 52%. Of more interest is the information regarding knowledge. After being presented with TILA information, the average TILA knowledge comprehension, out of 5, was 2.95. The average financial knowledge score was 3.46 (out of 6). 23.67% of those who did not receive mortgage education information, the treatment in the experiment, correctly chose the most appropriate mortgage for both scenarios while 36.17% correctly answered both after receiving the treatment (see Table 2). 15% of respondents

who did not receive the treatment were unsure of the most appropriate mortgage type compared to 6% who did receive the treatment.

4.2 Path Analysis results

Table 4 and Table 5 provide the pathways that have been established in this model. All the pathways that were expected to be significant were significant, although the direction is not always as we expected. Age, education, and prior mortgage experience had positive effect on higher financial knowledge ($P < .001$). Females, rather than males, had higher financial knowledge. Having grown up in a household where parents were homeowners was also positively associated with higher TILA comprehension.

As expected, higher financial knowledge led to higher TILA Comprehension, even after controlling for education level and prior mortgage experience, both of which were also positively associated with TILA comprehension.

Two mediating effects were examined to check for indirect relationships between key variables and the predicted latent variable of answering the mortgage questions correctly. TILA documentation being required disclosure in this process, we wanted to examine what effects TILA comprehension had on our treatment variable (figure 3) as well as financial knowledge (figure 4).

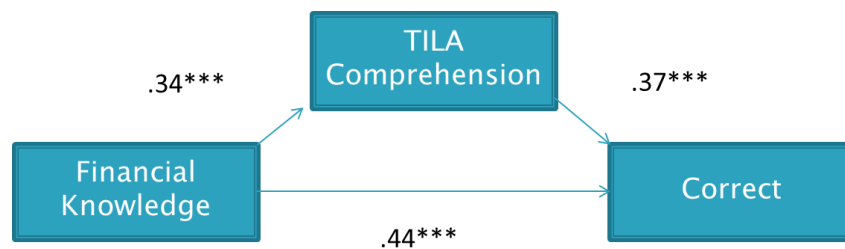


Figure 3

Figure 3 is an isolated view of this mediating effect from the model. A bootstrap method was conducted to check for the significance of an indirect effect. The indirect effect here is the product of the financial knowledge to TILA comprehension pathway coefficient and the TILA comprehension to the correct mortgage choice pathway coefficient. The indirect effect is .126 and it is significant ($P < .01$) so partial mediation exists. The total effect of financial knowledge is the sum of the direct and indirect effect which is thus .566 ($.44 + .126$). Financial knowledge is thus a driving factor in being able to correctly identify the most appropriate mortgage choice.

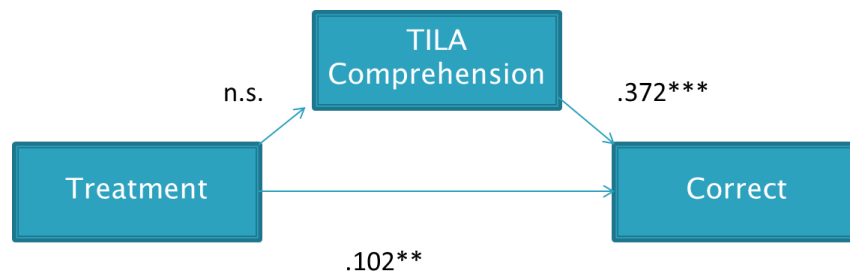


Figure 4

We were also interested in knowing if any mediating effects existed with regards to our treatment document. Figure 4 is an isolated view examining this mediating effect from our model. When a bootstrap method was conducted to examine this relationship, no mediating effect was found, only the direct effect the treatment has on answering the correct mortgage choice is significant. This is important to note because if we found there was full mediation between these variables, that would indicate to us that there is no value in requiring this added treatment document to the mortgage selection process; that is to say that if it were fully mediated any added value the treatment document may have added was already being added by the TILA comprehension which is represented by an already required disclosure form. We conclude that

the treatment document, on its own, does increase the probability that someone will be able to identify the most appropriate mortgage type.

5 Conclusions, implications, and limitations

The three financial knowledge and information variables proved significant in determining households who chose the most appropriate mortgage type for both of our housing scenarios. Receiving the treatment, the Federal Reserve Board Consumer Protection Resources Fixed vs. Adjustable Rate Mortgages document did help consumers make the most appropriate mortgage selection. Providing Truth in Lending information helped respondents make appropriate mortgage decisions but perhaps policy makers and educators can make this information easier to understand as an average score of 2.95 out of 5 indicates people are still confused even after reading the document and our results indicate that those with improved scores are more likely to choose the most appropriate mortgage. Respondents with higher financial knowledge scores were more likely to choose the most appropriate mortgage indicating that more financial education would be beneficial which can be assisted based on efforts of policy makers, financial educators and financial planners.

One of the limitations to this study is that we do not know who in our sample is currently searching for a home. A household that is preparing to make the financial decision to purchase a home may be more familiar with mortgage types even though we did try controlling for this by asking about their past or current mortgage experience and if home ownership is important. Such a person may have more arousal about the homeownership prospects that may lead to information search. Furthermore, we are unsure if the respondent in our survey would be the person in the household who would be making the financial decision of which mortgage to select.

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This study has shown that information treatments, even a one-page disclosure can improve mortgage choice. It also suggests that many consumers may not full grasp all of the concepts and math associated with making mortgage decisions. This study used an experimental design, which is novel in exploring the role of financial education interventions in financial decision-making. Further studies focusing on additional critical consumer decisions should consider using similar efforts to explore the role of information and even choice framing.

Appendix A. Scenarios

Scenario 1: Jerome (age 31) and Sharon (age 31) are seeking to purchase their first home. Jerome is beginning his medical career with a 3 year residency. They are not fond of the town they will be living in and plan to move to another state following the end of his residency. Sharon is planning to work in retail management; she has several years of experience with large appliance stores. They have good credit history and are looking to purchase a \$195,000 home and they will put \$10,000 down.

Scenario 2: Margaret and Max recently got remarried to each other. They have three children under 18 who will be living with them. They have found a home in a good school district that they would like all of their children to matriculate from; the youngest would do so in about 14 years. Max has been a teacher for 5 years and Margaret owns her own store which has been in business for some time. The home costs \$212,000; they would like to put \$20,000 down.

Appendix B. Truth-in-lending Act documents

STATEMENT OF LOAN TERMS

John Doe and Jane Doe
1234 Main Street, Anytown, ST 12345

ABC Bank
January 1, 2012

You have no obligation to accept this loan. Use this statement to confirm that these are the loan terms for which you applied. For more information see: www.frb.gov/mortgage/tilahelp.htm.

LOAN SUMMARY

Loan Amount:	\$200,000 of which: \$198,000.00 goes toward the home purchase \$2,000 goes toward settlement charges
Loan Term:	30 years
Loan Type:	Adjustable Rate Mortgage (ARM)
Total Estimated Settlement Charges:	\$8,625.00 This does not include your down payment. See your Good Faith Estimate or HUD-1 for details.
Prepayment Penalty:	Up to \$4,000.00 if you pay off your loan, refinance, or sell this property within x years

ANNUAL PERCENTAGE RATE (APR)

Your interest rate
with settlement
charges included:

7.59%

How does this loan compare? The average APR on comparable loans recently offered to borrowers with excellent credit was 5.49%. In today's market, an APR of 6.99% is considered subprime (high cost).

PAYMENT SUMMARY

	INTRODUCTORY Rate & Monthly Payment (for first 5 years)	MAXIMUM at FIRST ADJUSTMENT (Jan. 2017)	MAXIMUM EVER (as early as 2019)
Interest Rate	6.875%	8.875%	12.875%
Principal	\$0	\$182.14	\$116.64
Interest	\$1,145.83	\$1,479.17	\$2,101.91
Est. Taxes + Insurance (Escrow)	\$332.00	\$332.00	\$297.00
Total Est. Monthly Payment	\$1,477.83	\$1,993.31	\$2,515.55

STATEMENT OF LOAN TERMS

KEY QUESTIONS TO ASK ABOUT RISK	
Can my interest rate increase?	YES. Your interest rate can increase beginning in January 2017. For more information, see the Payment Summary table on page 1.
Can my monthly payment increase?	YES. Your monthly payment can increase beginning in January 2017. For more information, see the Payment Summary table on page 1.
Will any of my monthly payments be interest-only?	YES. Your monthly payments for the first 5 years of the loan (until January 2017) only cover interest and do not include any principal. Making these monthly payments will not reduce your loan balance during this period.
Could I owe a prepayment penalty?	YES. If you pay off your loan, refinance, or sell your home within 2 years you could pay a penalty of up to \$4,000.
Will I owe a balloon payment?	No.

MORE INFORMATION ABOUT YOUR PAYMENTS

Rate Change	As shown in the Payment Summary table on page 1, you have a discounted introductory rate that is fixed at 6.875% for the first five years. After this five year period, and each year after that, your rate will be based on the one-year LIBOR index (the market rate) plus 5.00%
Rate Change Limits	After the first five years, your interest rate can increase no more than 2.00% from one year to the next, and no more than 6.00% total for the life of the loan, which would result in the maximum ever rate of 12.875%.
Escrow	An escrow account is required for property taxes, and for homeowner's, private mortgage, and other insurance. Your escrow payment is an estimate and can change at any time. See your Good Faith Estimate or HUD-1 form for more details.
Total Payments	If the market rate did not change and you made all the payments as scheduled, you would make 360 payments totaling \$589,385.69, including estimated escrow. Of this amount, \$307,935.69 would go to interest and settlement charges. This amount and your amount financed of \$193,250.00 are used to calculate your APR.

Ask questions if you do not understand any part of this form.

- If you are unable to make payments on this loan, you could lose your home.
- There is no guarantee that you will be able to refinance to lower your rate and payments.

I acknowledge receipt of this form

Date

Appendix C. Truth-in-lending Act quiz questions

1. What will be the interest rate for the first 5 years of the ARM loan?
 - a) 7.59%
 - b) 8.875%
 - c) 6.875%
 - d) 5.49%
2. Assuming you pay off the loan in 30 years (with the market rate not changing), how much interest and settlement charges would you pay on the ARM loan?
 - a) \$589,385.69
 - b) \$307,935.69
 - c) \$200,000.00
 - d) \$193,250.00
3. If you paid the loan off early, refinanced, or sold the home, how much of a potential penalty would you pay up to?
 - a) \$8,625.00
 - b) \$2,000.00
 - c) \$1,477.83
 - d) \$4,000.00
4. An escrow account is
 - a) To hold settlement charges
 - b) How to pay a balloon payment
 - c) Required for property taxes and insurance
 - d) fixed amount always to be paid by lender
5. After the first 5 years of the loan, the maximum change to the interest rate for the life of the loan is
 - a) 6%
 - b) 2%
 - c) 5%
 - d) 6.99%

Appendix D. Financial Knowledge Instrument

1. Which of the following credit card users is likely to pay the GREATEST dollar amount in finance charges per year, if they all charge the same amount per year on their cards?
 - a) Someone who always pays off their credit card bill in full shortly after it is received.
 - b) Someone who only pays the minimum amount each month (%).
 - c) Someone who pays at least the minimum amount each month, and more when they have more money.
 - d) Someone who generally pays their card off in full, but occasionally will pay the minimum when they are short on cash.
 - e) Don't know
2. Which of the following types of investment would best protect the purchasing power of a family's savings in the event of a sudden increase in inflation?

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- a) Twenty-five year corporate bond.
 - b) A house financed with a fixed rate mortgage.
 - c) A 10-year bond issued by a corporation.
 - d) A certificate of deposit at a bank.
 - e) Don't know.
3. Which of the following statements best describes your right to check your credit history for accuracy?
- a) All credit records are the property of the U.S. Government and access is only available to the FBI and Lenders.
 - b) You can only check your credit report for free if you are turned down for credit based on a credit report.
 - c) Your credit report can be checked once a year for free.
 - d) You cannot see your credit report.
 - e) Don't know.
4. Which of the following loans is likely to carry the highest interest rate?
- a) Car loan
 - b) A home equity loan
 - c) A credit card loan
 - d) A student loan
 - e) Don't know
5. Which of the following is TRUE about the annual percentage rate (APR)?
- a) APR is expressed as a percentage on a semi-annual basis.
 - b) APR does not take into account all loan fees.
 - c) APR is not an accurate measure of the interest paid over the life of the loan.
 - d) APR should be used to compare loans.
6. A high-risk and high-return investment strategy would be most suitable for:
- a) An elderly retired couple living on a fixed income.
 - b) A middle-aged couple needing funds for their children's education in two years.
 - c) A young married couple without children.
 - d) All of the above because they all need high returns.
 - e) Don't know.
7. How comfortable do you feel with your knowledge about financial management?
- a) I do NOT know enough.
 - b) I understand some of what I read.
 - c) I know as much as I need to.

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Table 1 Description of the variables

Variables	Description
Information and knowledge variables	
Mortgage information	A treatment, 1=provided, 0=not provided
TILA knowledge	Number of correct answers among 5 questions about TILA
Financial knowledge	Number of correct answers among 6 questions about general financial knowledge
Social learning variable	
Parents Homeowner	Were your parent(s) or guardians homeowners for some or most of your childhood? 1= yes, 0=no
Personal psychology and Social cognitive Preference variables	
Risk tolerance	13 items for risk tolerance (Grable & Lytton, 1999)
Personal experience	Have you ever had a mortgage? 1=yes, 0=no
Financial position variables	
Household income	Current household income, 1= \$0-20,000, 2= \$20,001-40,000 3= \$40,001-70,000, 4=\$70,001 and up
Demographic variables	
Age	How old are you currently?; coded continuously
Race	1=White, 0=other
Education	1=less than high school degree & High school degree or equivalent
	2=currently in school & associate degree
	3= completed some college but no degree
	4= Bachelor degree
	5= Graduate degree
Gender	1=female, 0=male

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Table 2 Frequencies for Mortgage Choice

Frequency (%)	Full Sample	Received mortgage info	Did not receive mortgage info
both not sure	50 (10.4)	14 (5.96)	36 (14.69)
both FRM	173 (36.0)	85 (36.17)	88 (35.92)
both ARM	19 (4.0)	12 (5.11)	7 (2.86)
Both Right	143 (29.8)	85 (36.17)	58 (23.67)
Both Wrong	95 (19.8)	39 (16.60)	56 (22.86)

Table 3 Descriptive Statistics

Variables	Full Sample N=480		Received mortgage info N=235		Did not receive mortgage info N=245	
	M (SD)	Frequency (%)	M (SD)	Frequency (%)	M (SD)	Frequency (%)
<i>Information and knowledge variables</i>						
Mortgage information (provided)		235 (49.0)				
TILA knowledge Score	2.952(1.390)		2.953(1.433)		2.951(1.351)	
0		19 (4.0)		12 (5.11)		7 (2.86)
1		71 (14.8)		33 (14.04)		38 (15.51)
2		86 (17.9)		41 (17.45)		45 (18.37)
3		104 (21.7)		51 (21.70)		53 (21.63)
4		138 (28.8)		64 (27.23)		74 (30.20)
5		62 (12.9)		34 (14.47)		28 (11.43)
Financial knowledge	3.460(1.591)		3.464(1.594)		3.457(1.593)	
0		17 (3.5)		6 (2.55)		11 (4.49)
1		46 (9.6)		24 (10.21)		22 (8.98)
2		79 (16.5)		41 (17.45)		38 (15.51)
3		78 (16.3)		42 (17.87)		36 (14.69)
4		122 (25.4)		53 (22.55)		69 (28.16)

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5	93 (19.4)	44 (18.72)	49 (20.00)
6	45 (9.4)	25 (10.64)	20 (8.16)
<i>Social learning variables</i>			
Parents or guardians home owners during your childhood (yes)	370 (77.1)	178 (75.74)	192 (78.37)
<i>Personal psychology and Social cognitive Preference variables</i>			
Risk tolerance			
Below average	232 (48.3)	117 (49.8)	115 (46.9)
average	180 (37.5)	89 (37.88)	91 (37.14)
above average	68 (14.2)	29 (12.34)	39 (15.92)
Have/had a mortgage			
yes	268(55.8)	141 (52.6)	127 (47.4)
no	212 (44.2)	94 (44.34)	118 (55.7)
<i>Financial position variables</i>			
Household income			
\$0-20,000	76 (15.8)	33 (14.04)	43 (17.55)
\$20,001-40,000	123 (25.6)	58 (24.68)	65 (26.53)
\$40,001-70,000	149 (31.1)	74 (31.49)	75 (30.61)
\$70,001 and up	132 (27.5)	70 (29.79)	62 (25.31)
<i>Demographic variables</i>			
Age	44.22(15.565)	45.15(16.04)	43.34 (15.07)
Race (White)	388 (80.8)	186 (79.15)	202 (82.45)
Education			
less than high school degree & High school degree or equivalent	112 (23.3)	50 (21.28)	62 (25.31)
currently in school & associate degree	66 (13.8)	33 (14.04)	33 (13.47)

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completed some college but no degree	127 (26.5)	62 (26.38)	65 (26.53)
Bachelor degree	133 (27.7)	72 (30.64)	61 (24.90)
Graduate degree	42 (8.8)	18 (7.66)	24 (9.80)
Gender (female)	249 (51.9)	127 (54.04)	122 (49.80)

No statistical difference exists at the 1% and 5% levels for the means between those who did and did not receive the treatment, mortgage information for any descriptive category

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Table 4: Regression Weights			Estimate	S.E.	C.R.	P
Financial Knowledge	<---	Age	.022	.004	4.980	***
Financial Knowledge	<---	Education	.278	.048	5.776	***
Financial Knowledge	<---	White	.780	.165	4.732	***
Financial Knowledge	<---	Prior Mortgage	.510	.142	3.603	***
Financial Knowledge	<---	Parents Homeowner	.379	.151	2.505	.012
Financial Knowledge	<---	Male	-.259	.123	-2.102	.036
TILA Comprehension	<---	Financial Knowledge	.318	.039	8.107	***
TILA Comprehension	<---	Prior Mortgage	.466	.120	3.889	***
TILA Comprehension	<---	Education	.120	.045	2.693	.007
Risk Tolerance	<---	Age	-.008	.003	-2.605	.009
Risk Tolerance	<---	Education	.063	.037	1.695	.090
Risk Tolerance	<---	White	-.286	.116	-2.465	.014
Risk Tolerance	<---	Male	-.317	.089	-3.542	***
Risk Tolerance	<---	Income	.068	.029	2.386	.017
TILA Knowledge	<---	Treatment	-.062	.110	-.559	.576
TILA Knowledge	<---	Male	.305	.111	2.737	.006
Correct Mortgage Choices	<---	Risk Tolerance	.143	.020	7.300	***
Correct Mortgage Choices	<---	Financial Knowledge	.177	.014	12.749	***
Correct Mortgage Choices	<---	TILA Comprehension	.169	.016	10.741	***
Correct Mortgage Choices	<---	Treatment	.128	.039	3.265	.001
*P < .05, ** P < .01., ***P < .001						

Table 5: Standardized Regression Weights			Estimate
Financial Knowledge	<---	Age	.219
Financial Knowledge	<---	Education	.228
Financial Knowledge	<---	White	.195
Financial Knowledge	<---	Prior Mortgage	.160
Financial Knowledge	<---	Parents Homeowner	.101
Financial Knowledge	<---	Male	-.082
TILA Knowledge	<---	Financial Knowledge	.360
TILA Knowledge	<---	Prior Mortgage	.166
TILA Knowledge	<---	Education	.112
Risk Tolerance	<---	Age	-.120
Risk Tolerance	<---	Education	.082
Risk Tolerance	<---	White	-.112
Risk Tolerance	<---	Male	-.158
Risk Tolerance	<---	Income	.116
TILA Knowledge	<---	Treatment	-.022
TILA Knowledge	<---	Male	.110

Table 5: Standardized Regression Weights			Estimate
Correct Mortgage Choices	<--- Risk Tolerance		.227
Correct Mortgage Choices	<--- Financial Knowledge		.442
Correct Mortgage Choices	<--- TILA Knowledge		.373
Correct Mortgage Choices	<--- Treatment		.102
*P < .05, ** P < .01., ***P < .001			

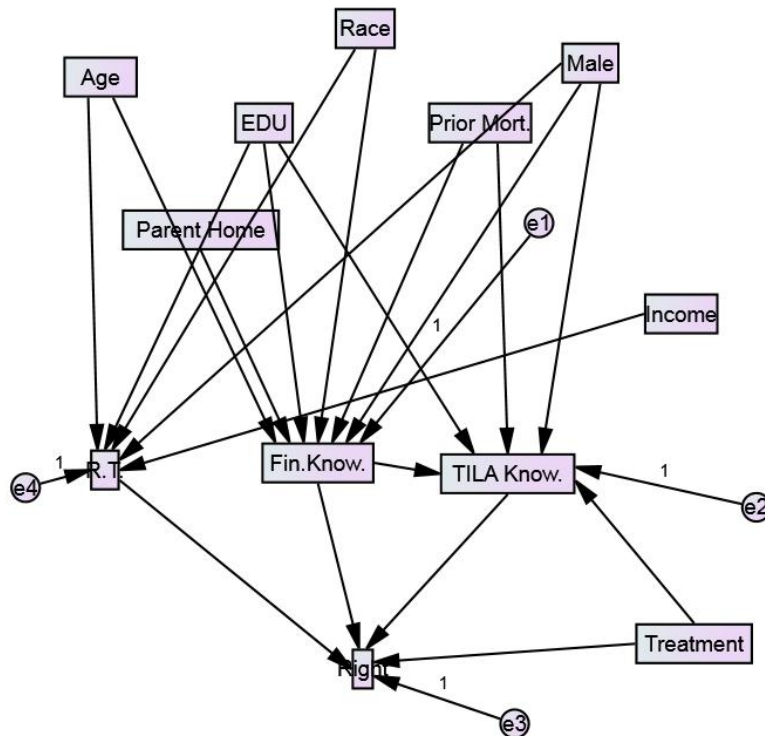


Figure 1: Path Analysis Model

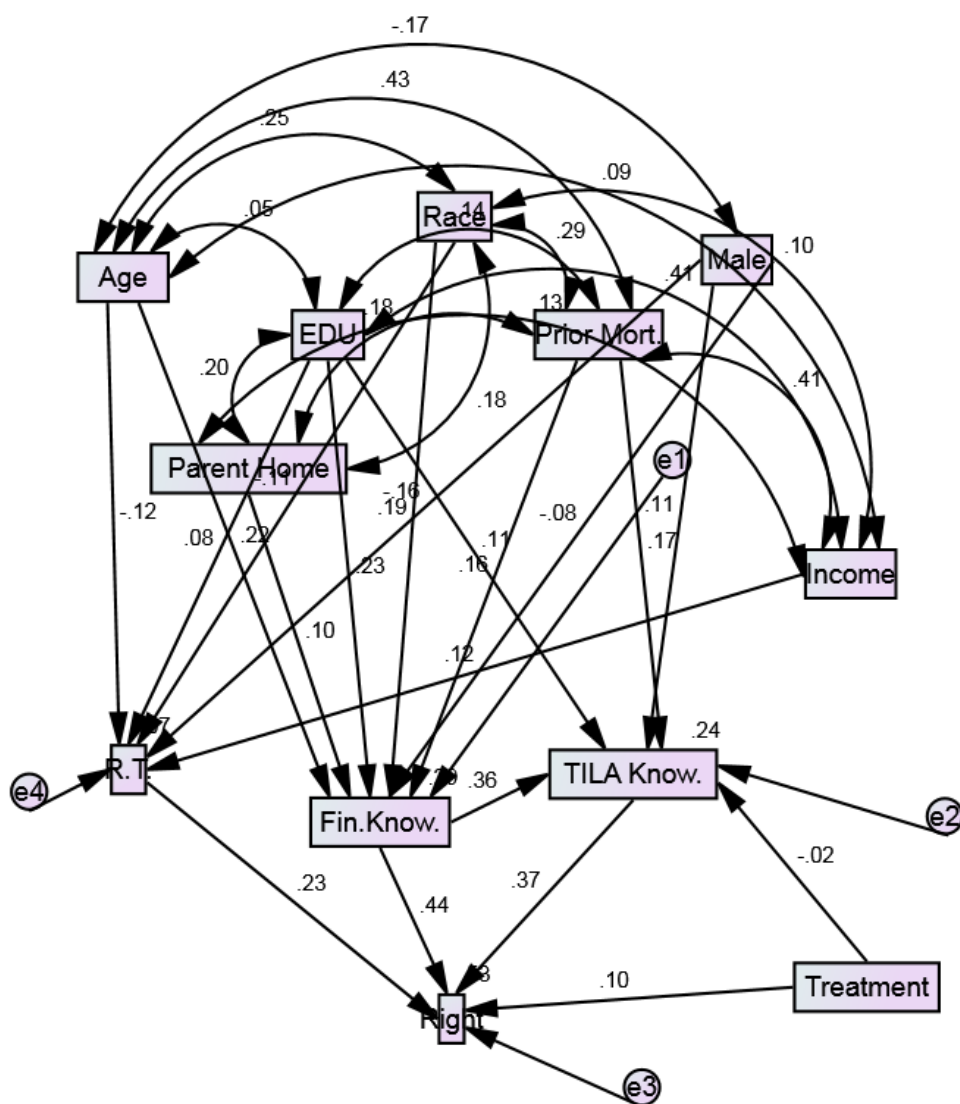


Figure 2: Standardized Regression Weights

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